

# **New Jersey's Institutional Control Database Experience**

**With a focus on GIS technology**

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New Jersey Department of Environmental Protection

# Topics covered

- Why we record data in GIS
- Site Remediation's IC datasets
- Other related datasets
- Tools for communication
- Future Goals

# Why bother to track IC data digitally?

- **Communicate risk**

We know that there is contamination out there. We need to be able to communicate this to the public along with what actions they can take to minimize their exposure.

- **Limit land use**

Once a property is identified as having contamination, it is important to define what uses have been impacted and what uses are still appropriate for this property.

- **Institutional memory**

We are making an effort to distill much of our data into a GIS format and incorporate it into a public access system. We feel that if we can make this information a part of the public culture, then, if this data is of interest, it will not be forgotten.



# NJDEP's Institutional Controls

- **CEA:** Classification Exception Area
- **DNA:** Deed Notice Area
- **SWL:** Sanitary Waste Landfill

# Classification Exception Areas (CEA)

CEA's are institutional controls in geographically defined areas within which the New Jersey **groundwater quality standards** for specific contaminants have been exceeded.

CEA's are site specific.

- We have ~ 2000 CEAs mapped in NJ.

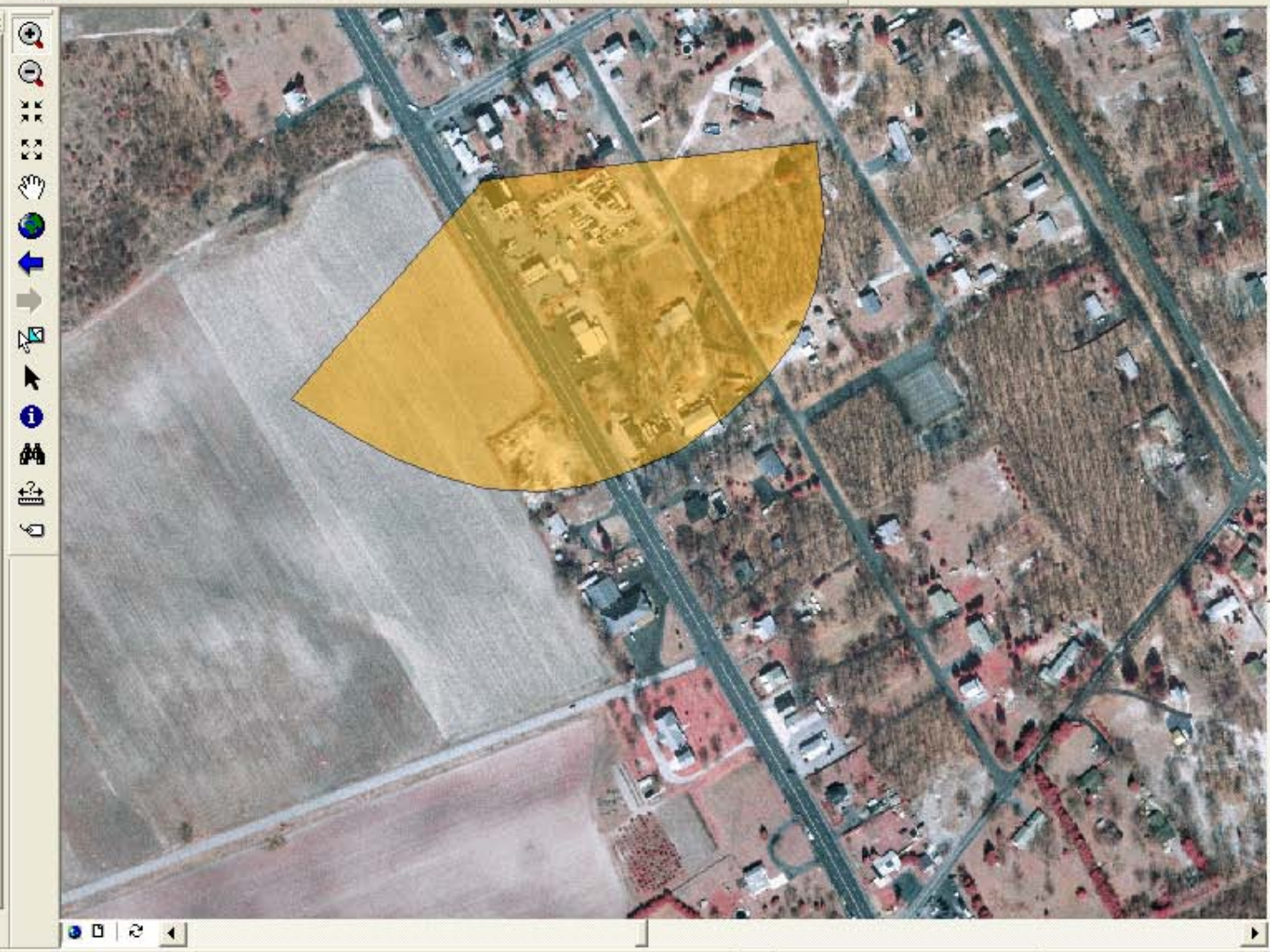


**Layers**

- ☐ Wellhead Protection Areas
  - ☐ Tier 1
  - ☐ Tier 2
  - ☐ Tier 3
- ☐ Public Community Water Supply Wells
- ☐ Groundwater Contamination Areas (CKE)
- ☒ Groundwater Contamination Areas (CEA)
  - ☐
- ☐ Deed Notices-poly
- ☐ Counties
- ☒ Municipalities
- ☒ NJ\_AirPhotos\_2002\_IS

Extent Rectangle

Display Source Selection

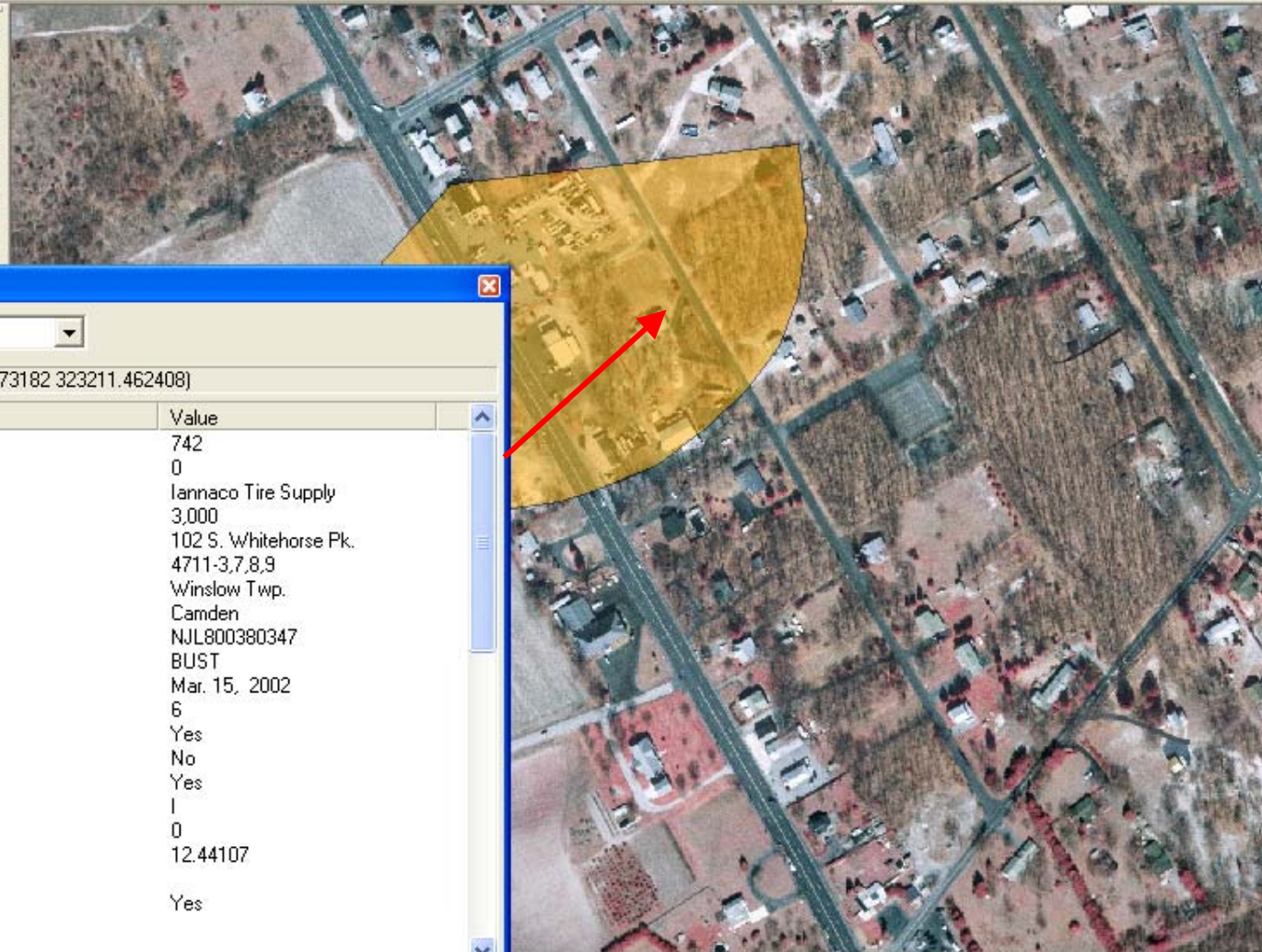




File Edit View Insert Selection Tools DEP-Data Window Help

  
1:3,966Editor Task: Create New Feature Target:  
Drawing Arial 10 B I U 

- Layers**
- ☐ Wellhead Protection Areas
    - Tier 1
    - Tier 2
    - Tier 3
  - ☐ Groundwater Contamination Areas
    -
  - ☒ Groundwater Contamination Areas



**Identify Results**

Layers: <Top-most layer>

☒ Groundwater Contamination Areas

☒ Iannaco Tire Supply

Location: (391218.873182 323211.462408)

Field	Value
OBJECTID	742
CEA_NUM	0
GISNAME	Iannaco Tire Supply
SCALE	3,000
ADDRESS	102 S. Whitehorse Pk.
BLK_LOT	4711-3,7,8,9
MUNICIPALITY	Winslow Twp.
COUNTY	Camden
KCSL	NJL800380347
LEAD	BUST
START_DATE	Mar. 15, 2002
DURATION	6
FINAL_REMEDY	Yes
CLOSED	No
WRA	Yes
GW_CLASS	I
DEPTH_FT	0
ACRES	12.44107
BENZENE	
MTBE	Yes
TBA	
TCE	

391442.66 322884.39 Feet

# Deed Notice Areas (DNA)

DNAs are institutional controls in a geographically defined area within which **soil remedial cleanup** guidelines for specific contaminants have been exceeded.

DNAs were developed to provide interested parties with information regarding soil contamination left remaining on site along with any engineering controls required to prevent exposure.

~ We have 700 mapped in NJ



**Layers**

- ☒ DNA
- ☒ Counties
- ☐ Municipalities
- ☒ NJ\_AirPhotos\_2002\_15
- ☒ Extent Rectangle

Display Source Selection





**Layers**

- ☒ DNA
- ☒ Counties
- ☐ Municipalities
- ☒ NJ\_AirPhotos\_2002\_IS

Extent Rectangle

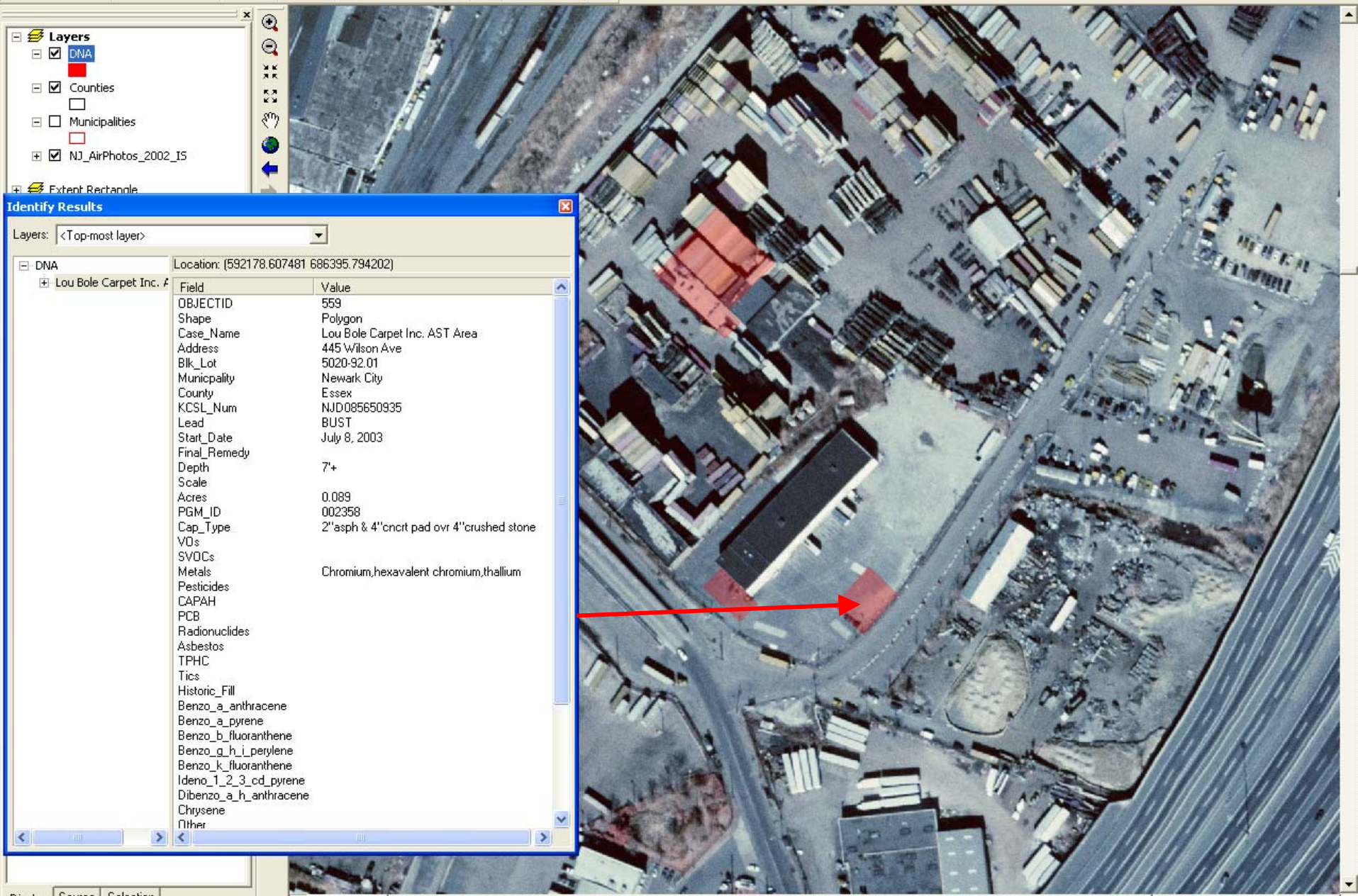
**Identify Results**

Layers: <Top-most layer>

DNA Location: (592178.607481 686395.794202)

+ Lou Bole Carpet Inc. #

Field	Value
OBJECTID	559
Shape	Polygon
Case_Name	Lou Bole Carpet Inc. AST Area
Address	445 Wilson Ave
Blk_Lot	5020-92.01
Municipality	Newark City
County	Essex
KCSL_Num	NJD085650935
Lead	BUST
Start_Date	July 8, 2003
Final_Remedy	
Depth	7+
Scale	
Acres	0.089
PGM_ID	002358
Cap_Type	2"asph & 4"cnrc pad ovr 4"crushed stone
VOCs	
SVOCs	
Metals	Chromium,hexavalent chromium,thallium
Pesticides	
CAPAH	
PCB	
Radionuclides	
Asbestos	
TPHC	
Tics	
Historic_Fill	
Benzo_a_anthracene	
Benzo_a_pyrene	
Benzo_b_fluoranthene	
Benzo_g_h_i_perylene	
Benzo_k_fluoranthene	
Ideno_1_2_3_cd_pyrene	
Dibenzo_a_h_anthracene	
Chrysene	
Other	





# Sanitary Waste Landfills (SWLs)

- SWLs are facilities for the storage and disposal of solid waste
- SWLs facility areas have regulations governing land use, permits are required for their disruption.
- There may be associated engineering controls.
- We have ~1000 identified SWLs in NJ; approximately 30 are currently active.



File Edit View Insert Selection Tools DEP-Data Window Help



Editor Task: Create New Feature Target:

Drawing Arial 10 B I U A

- Layers**
- ☒ SWL
  - ☐ Wellhead Protection Areas
    - Tier 1
    - Tier 2
    - Tier 3
  - ☐ Groundwater Contamination Areas
  - ☐ Groundwater Contamination Areas
  - ☐ Public Community Water Supply We
  - ☐ Deed Notices-poly
  - ☐ Counties
  - ☐ Municipalities
  - ☒ NJ\_AirPhotos\_2002\_IS
- Extent Rectangle**



Display Source Selection

339163.78 425165.30 Feet



File Edit View Insert Selection Tools DEP-Data Window Help

1:18,463

Editor Task: Create New Feature Target:

Drawing Arial 10 B I U A

**Layers**

- SWL
- Pennsauken SLF

**Identify Results**

Layers: <Top-most layer>

Location: (341407.511549 421559.305694)

Field	Value
OBJECTID	184
Shape	Polygon
ID	184
NAME	Pennsauken SLF
ADDRESS	Rlver Rd & Rte 73
MUNICIPALITY	Pennsauken Twp.
COUNTY	Camden
CONFIDENCE	High
EDIT_DATE	08/20/04
CSLNUM	NJD986569598
AKA_1	
AKA_2	
SW_ID_NEW	0427000238
SW_ID	
WASTE_TYPE	10,23
OWNER	QUESTION
NJPDES_NUM	NONE
SWL_TYPE	MUNICIPAL
WATERSHED	Ranacocas Creek
PREF_ID	<null>
Case_Tracking_Num	<null>
Subject_Item_Category_Code	<null>

Display Source Selection

335798.18 425453.78 Feet

# Supporting Data Elements

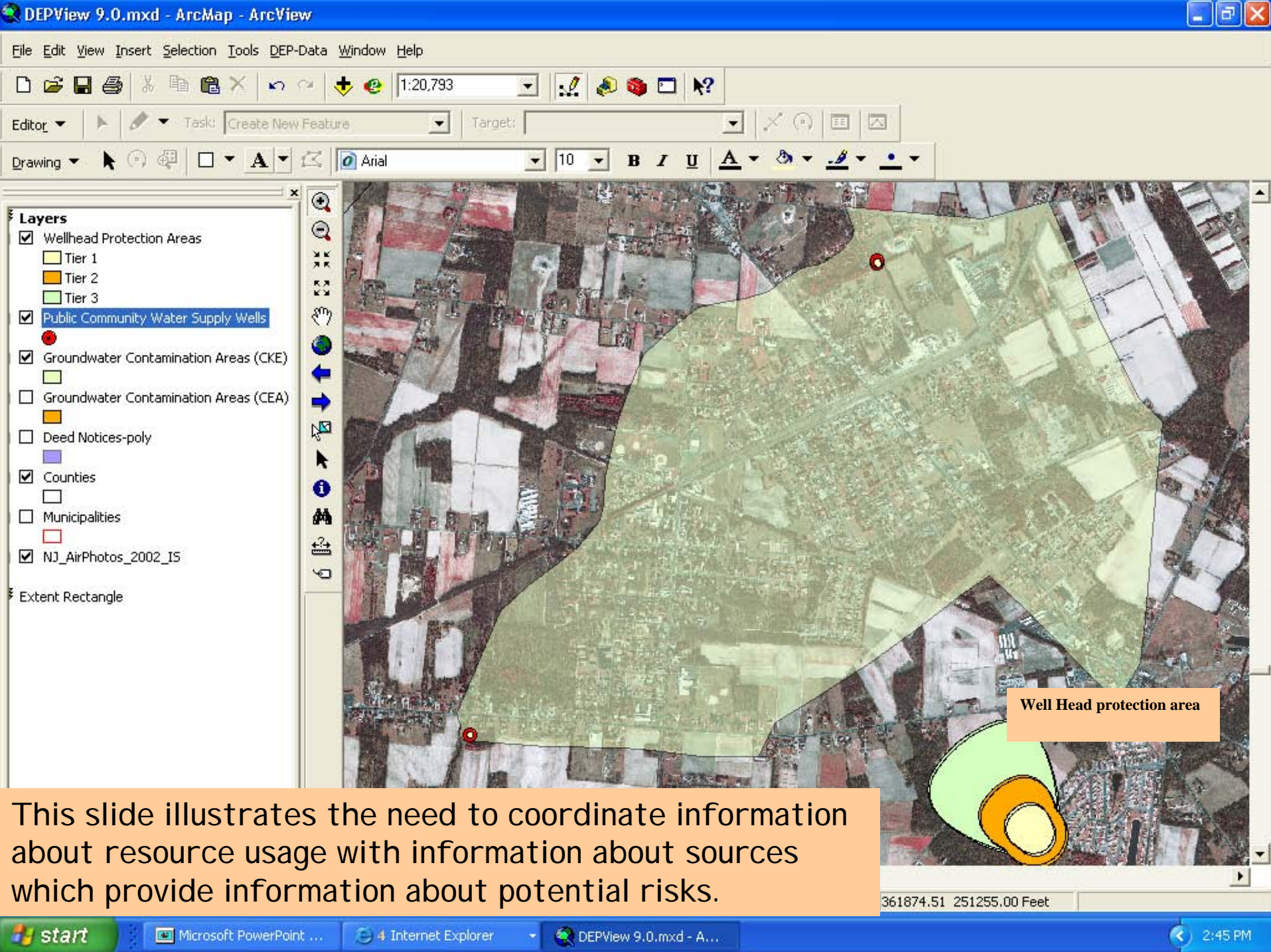
Other data elements have been developed that work in conjunction with ICs

- **CKE:** Currently Known Extent
- **HazSite:** Digitally submitted sampling data



# Currently Known Extent (CKE)

CKEs communicate large regions where known **impacts to groundwater** have occurred. These are typically unknown source cases.



This slide illustrates the need to coordinate information about resource usage with information about sources which provide information about potential risks.



# HazSite

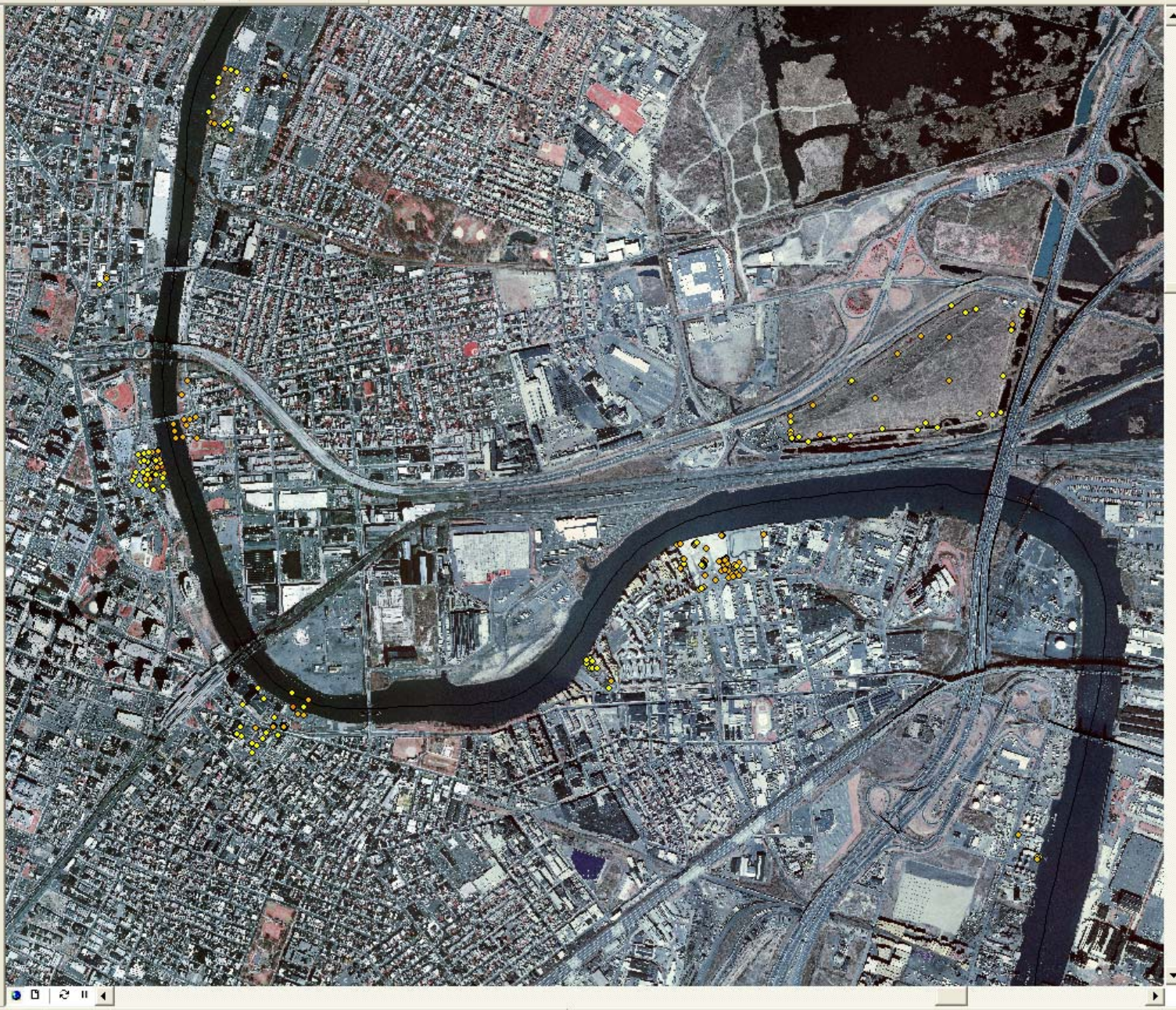
All contaminated site sampling data are required to be submitted electronically to the department in a GIS compatible format.



**Layers**

- ☒ dioxin-riv&bay3
  - result\_num
    - 0.000000
    - 0.000001 - 216000.000000
    - 216000.000001 - 324000.000000
    - 324000.000001 - 432000.000000
    - 432000.000001 - 540000.000000
- ☒ Counties
- ☐ Municipalities
- ☒ NJ\_AirPhotos\_2002\_15
- ☒ Extent Rectangle

Display Source Selection





**Layers**

- ☒ dioxin-riv&bay3
  - result\_num
    - 0.000000
    - 0.000001 - 216000.000000
    - 216000.000001 - 324000.000000
    - 324000.000001 - 432000.000000
    - 432000.000001 - 540000.000000
- ☒ CEA
- ☒ DNA
- ☒ SWL
- ☒ Counties
- ☐ Municipalities
- ☒ NJ\_AirPhotos\_2002\_15
- ☒ Extent Rectangle

Display Source Selection





# NJDEP has made the decision to make this data publicly available.

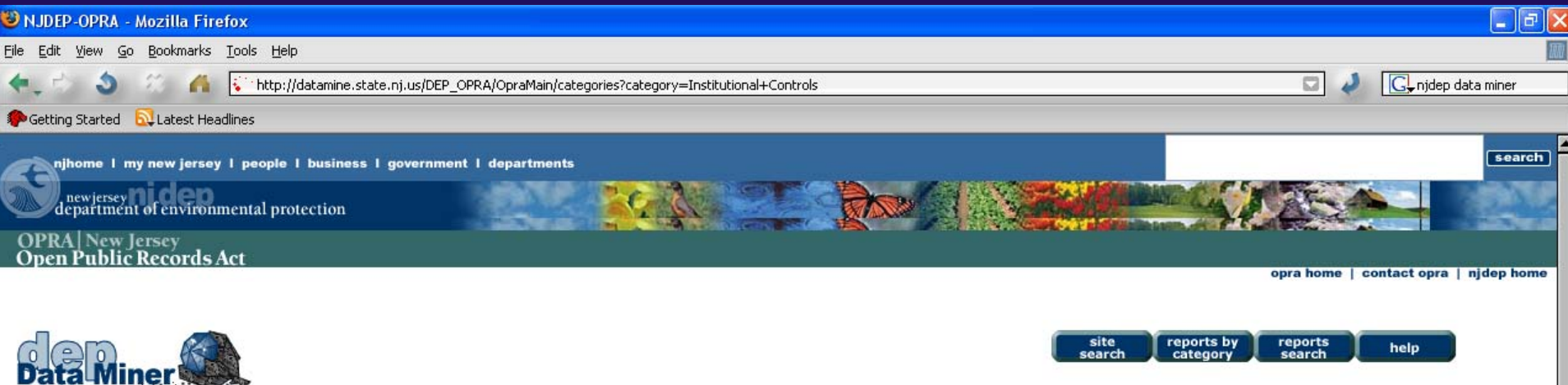
## Tools for making data accessible

- Call office of community relations
- Make OPRA request - (File Review)
- Data Miner
- GIS data downloads
- Interactive web-based mapping
  - imap
  - “google earth”



# Data Miner

- Data miner is the public access web-based front-end for NJEMS
- NJEMS “New Jersey Environmental Management System” A department-wide, cross-program database system that allows for up-to-date information on site status.



## Institutional Controls

- [Sites With a Classification Exception Area](#)

This report enables the requestor to receive a list of all Classification Exception Areas (CEAs) issued within the SRWM. CEA means an area where one or more constituent standards and designated uses are suspended in accordance with N.J.A.C. 7:9 C-1.6. The report is sorted by county and then by municipality. There is also GIS coverage on NJDEP iMap.

- [Sites with a Deed Notice](#)

- This report enables the requestor to receive a list of all Declaration of Environmental Restrictions / Deed Notices (DER/DN) issued within the SRWM. "DER/DN" means a document that provides notice of specific real property contamination issues in accordance with N.J.A.C. 7:26 E, Appendix E. The report is sorted by county and then by municipality. There is also GIS coverage on NJDEP iMap.



## Sites with a Classification Exception Area

Mar 23, 2006 - 05:03:43 PM

County: Atlantic

### **Municipality: Absecon City**

PI # - 006137

PI Name - ATLANTIC CNTY UHAUL (ABSECON)

Street Addr. - 1 WHITE HORSE PK

Document Title	Activity Number	Document Status	Bureau Acronym	Date Established	Date Closed/Lifted
89-11-02-1514 BUST C2	USR000001	Active	BSCM	10/30/01	

PI # - 014046

PI Name - ABSECON SHELL

Street Addr. - 128 ABSECON BLVD E

Document Title	Activity Number	Document Status	Bureau Acronym	Date Established	Date Closed/Lifted
92-11-18-1546 BUST C2	USR000001	Active	BSCM	12/3/97	

PI # - 020382

PI Name - SAFETY BUS SERVICE

Street Addr. - 235 ABSECON BLVD

Document Title	Activity Number	Document Status	Bureau Acronym	Date Established	Date Closed/Lifted
91-07-17-0900 BUST C2	USR000001	Active	BSCM	11/17/97	

### **Municipality: Atlantic City**

# iMAP

An internet based GIS application available both in-house to NJDEP staff as well as to the public at large.



zoom  
inzoom  
out

pan

identify

last  
extentfull  
extentselect by  
rectangleselect by  
line/polygonclear  
selectionset  
origin

measure

Other Tools

Data Layers

Legend

refresh map

Visible Active

- ☐ ☐ [Groundwater Contamination Areas \(CKE\)](#)
- ☐ ☐ [Groundwater Contamination Areas \(CEA\)](#)
- ☐ ☐ [Watershed Management Areas](#)
- ☐ ☐ [Watersheds by Name \(HUC11\)](#)
- ☐ ☐ [Sub-Watersheds \(HUC14\)](#)
- ☐ ☐ [Water Bodies](#)
- ☐ ☐ [Streams](#)
- ☐ ☐ [Streets](#)
- ☒ ☐ [Counties](#)
- ☒ ☐ [Municipalities](#)
- ☐ ☐ [Known Contaminated Sites List \(2001\)](#)
- ☐ ☐ [Equis](#)

NOTE: Availability of data layers is affected by zooming in/out.



0 81126.36ft

Queries

Reports

User: jdefina

Group: Site Remediation Program (SRP)

- ? [Find Location of interest](#)
- ? [Search Contaminants within radial distance of a point](#)
- ? [Control Effectiveness](#)
- ? [Locate Receptors at risk from contaminated spill](#)
- ? [Locate contaminants near a point \(for new well-drilling\)](#)
- ? [Environmental risks in an area](#)

The Data Miner report will help you locate an IC of concern to use here

zoom  
inzoom  
out

pan

identify

last extent

full extent

select by  
rectangleselect by  
line/polygonclear  
selectionset  
origin

measure

Other Tools

Data Layers

Legend

refresh map

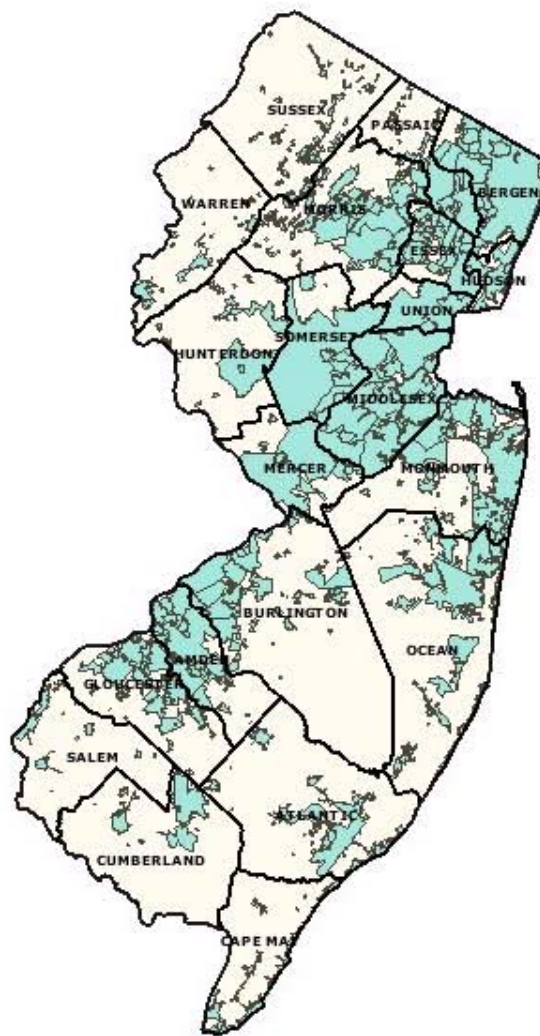
Queries

Reports

Visible Active

- ☒ ☐ [Aerial Photos 2002](#)
- ☒ ☐ [Purveyor](#)
- ☒ ☐ [Water Bodies](#)
- ☒ ☐ [Wellhead Protection Areas](#)
- ☐ ☐ [Surficial Aquifer](#)
- ☒ ☐ [Groundwater Contamination Areas \(CKE\)](#)
- ☒ ☐ [Groundwater Contamination Areas \(CEA\)](#)
- ☐ ☐ [Watershed Management Areas](#)
- ☐ ☐ [Watersheds by Name \(HUC11\)](#)
- ☒ ☐ [Sub-Watersheds \(HUC14\)](#)
- ☒ ☐ [Streams](#)
- ☐ ☐ [Streets \(TIGER\)](#)
- ☒ ☐ [Counties](#)
- ☒ ☐ [Municipalities](#)
- ☐ ☐ [Known Contaminated Sites List \(2001\)](#)
- ☐ ☐ [Public Community Water Supply Wells](#)
- ☒ ☐ [HAZSITE \(Groundwater\)](#)
- ☒ ☐ [Equis](#)

NOTE: Availability of data layers is affected by zooming in/out.



(C)NJDEP

Selected Features: 0

south

## Potable Well Drilling

Annually ~ 20,000 wells are installed/yr. NJ.

~ 10,000 are for drinking water purposes.

Historically there has not been a method available to the public to insure that wells are not being placed in contaminated GW areas.

Until Now...I-MapNJ  
and SRPs contaminated site data



i-MapNJ

zoom  
inzoom  
outfull  
extentlast  
extent

pan

identify

select

query

Selected data

clear  
selectionset  
origin

buffer

Set Units

print

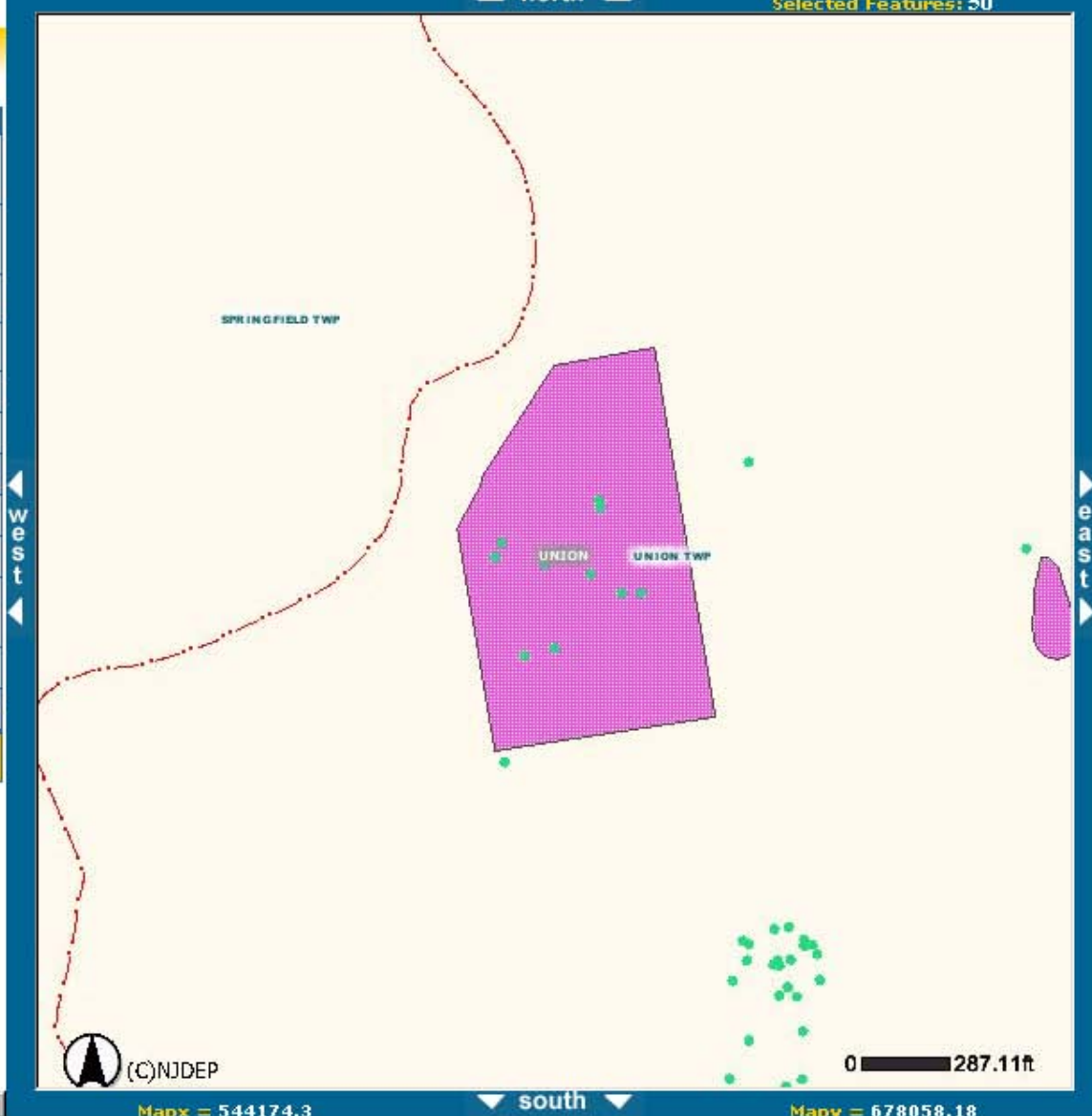
Data Layers

Legend

refresh map

Visible	Active	Layer Name
<input checked="" type="checkbox"/>	<input type="radio"/>	groundwater contamination areas (cke)
<input checked="" type="checkbox"/>	<input type="radio"/>	groundwater contamination areas (cea)
<input type="checkbox"/>	<input type="radio"/>	watershed management areas
<input type="checkbox"/>	<input type="radio"/>	watersheds by name (huc11)
<input type="checkbox"/>	<input type="radio"/>	water bodies
<input type="checkbox"/>	<input type="radio"/>	streams
<input checked="" type="checkbox"/>	<input type="radio"/>	* streets
<input checked="" type="checkbox"/>	<input type="radio"/>	counties
<input checked="" type="checkbox"/>	<input type="radio"/>	municipalities
<input type="checkbox"/>	<input type="radio"/>	known contaminated sites list (2001)
<input checked="" type="checkbox"/>	<input type="radio"/>	equis
<input checked="" type="checkbox"/>	<input type="radio"/>	* orthophotography

\* availability of data layers is effected by zooming in/out



Query

Reports

User: srp

Group: Site Remediation Program (SRP)

- ? Find Location of interest
- ? Search Contaminants within radial distance of a point
- ? Control Effectiveness

Debug Area

(This Frame Will Be Removed Later)

Selected Features =18

Layer Name =equis

Zoom TO All

Close

SYS SAMPLE	CAS RN	CHEM NAME	RESULT VAL	RESULT UNI	METHOD	SAMPLE MAT	LOC TYPE	START DEPT	END DEPTH	X COORD	Y COORD	CUSTOM FIE	RESULT NUM	ACTION NUM	ACTION UNI	
19990907mw-14	934-74-7	benzene, 1-ethyl-3,5-dimethyl- (r.t. = 12.922)	160	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	160	999999999		0
19990907mw-14	1758-88-9	benzene, 2-ethyl-1,4-dimethyl- (r.t. = 12.537)	160	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	160	999999999		0
19990907mw-14	95-63-6	benzene, 1,2,4-trimethyl- (r.t. = 11.433)	400	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	400	100	ppb	4
19990907mw-14	622-96-8	benzene, 1-ethyl-4-methyl- (r.t. = 11.601)	420	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	420	999999999		0
19990907mw-14	620-14-4	benzene, 1-ethyl-3-methyl- (r.t. = 11.374)	690	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	690	100	ppb	6.9
19990907mw-14	535-77-3	benzene, 1-methyl-3-(1-methylethyl)- (r.t. = 12.4	190	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	190	999999999		0
19990907mw-14	526-73-8	benzene, 1,2,3-trimethyl- (r.t. = 11.729)	690	ug/l	n/a	ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	690	100	ppb	6.9
19990907mw-14	srp 138	m&p-xylenes	1300	ug/l		ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	1300	999999999		0
19990907mw-14	95-47-6	o-xylene	1800	ug/l		ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	1800	999999999		0
19990907mw-14	91-20-3	naphthalene	61	ug/l		ground wat	monitor we	15.15	0	545667.81	676025.17	hz007276	61	300	ppb	0.2



# Google Earth

- Free GIS web client application published by Google.

e.g. Hotels near JFK

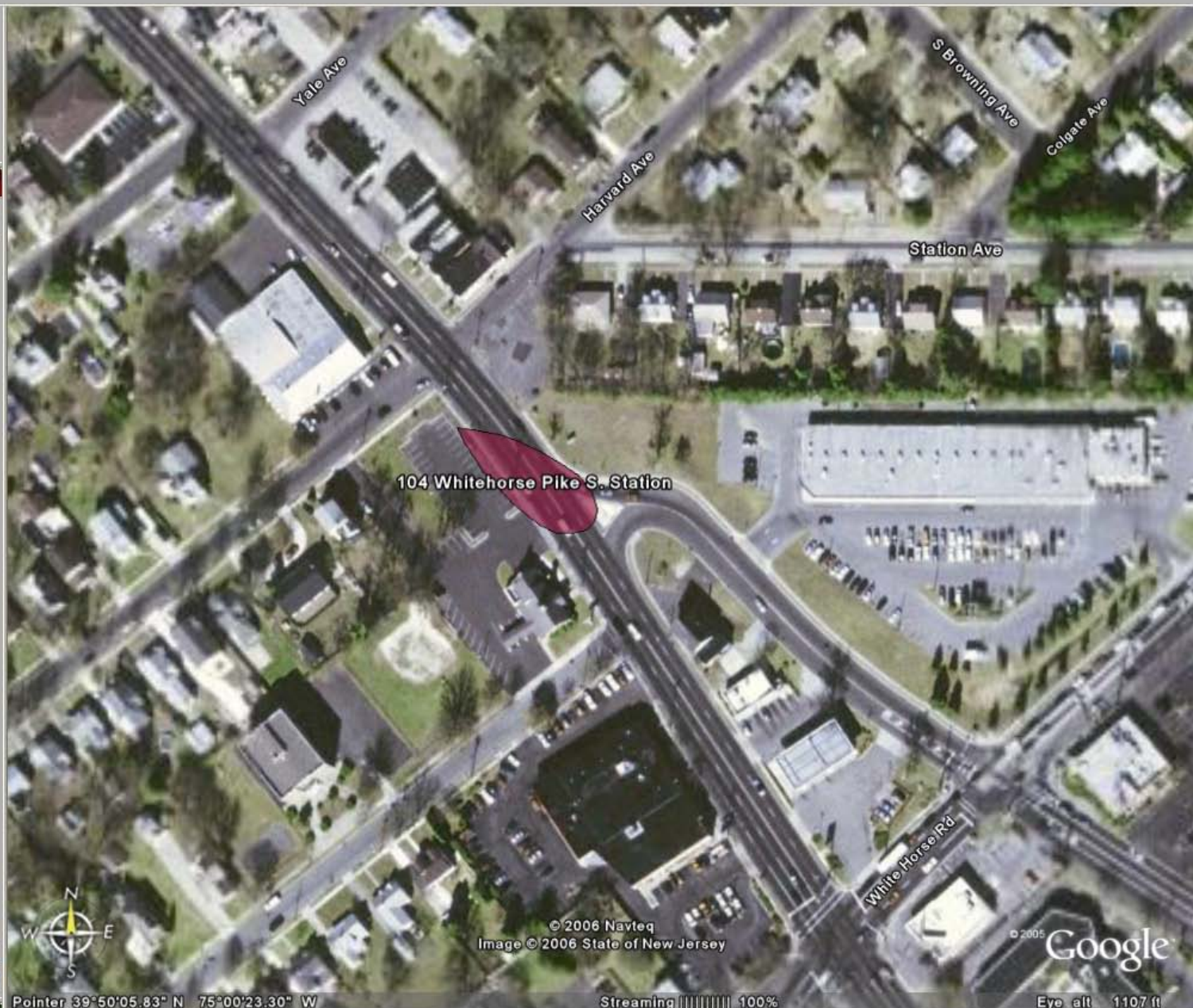


## Places

- ☐ My Places
  - ☐ London Police
  - ☐ Sightseeing
    - Start your Google Earth world tour here!
    - Click on an underlined
- ☐ Temporary Places
  - ☐ [CEA of two using layer's symbol](#)  
Exported from MMOORE.CEA on 1/20/2006 created labels
  - ☒ CEA
    - Exported from CEA on 1/20/2006
    - ☒ 104 Whitehorse Pike S. Station
      - ☒ 104 Whitehorse Pike S. Station
        - ☒ 104 Whitehorse Pike S. Station
          - ☒ 1111 Secaucus Rd.
          - ☒ 2005 Route 88 E.
          - ☒ 203 Inman Avenue Corp.
          - ☒ 225 Saint Paul's Ave.
          - ☒ 297 Getty Avenue Assoc.
          - ☒ 3103 Ventnor Ave.
          - ☒ 33 Hook Road
          - ☒ 335 to 347 Raymond Blvd.
          - ☒ 431 Mantoloking Rd.
          - ☒ 5349 Kennedy Blvd
          - ☒ 719 American Legion Drive
          - ☒ 908 Northwood Ave. Holding Co
          - ☒ 922 Rt. 73 S.
          - ☒ A-1 Limousine
          - ☒ A&P Shopping Center
          - ☒ A. Bohrer Inc.
          - ☒ A. Marucca & Sons, Inc.
          - ☒ A.E. Stone, Inc.
          - ☒ A.J. Maglio Co.
          - ☒ Abandoned Gas Station
          - ☒ Abandoned Service Station

## Layers

- ☒ Layers
  - ☐ terrain
  - ☐ National Geographic Magazine
  - ☐ Google Earth Community



Pointer 39°50'05.83° N 75°00'23.30° W

Streaming 100%

Eye alt 1107 ft

- |                                  |   |
|----------------------------------|---|
| <input type="checkbox"/> Lodging | <input type="checkbox"/> Dining             |
| <input type="checkbox"/> Roads   | <input checked="" type="checkbox"/> Borders |
| <input type="checkbox"/> Terrain | <input type="checkbox"/> Buildings          |





# The Future

Currently, only a small percentage of contaminated sites in New Jersey have ICs.

It is a goal of NJDEP to have 100% of sites with long-term contamination under an institutional control.

In addition to this goal, our current activities include:

- Mapping contaminated sites and making this data publicly available
- Developing regulations which require the use of our digital IC data prior to land and resource usage
- Developing in-house IT tools to verify that these regulations are being adhered to
- Continuing to expand the use of digital data
- Developing new digital data elements

# Props To My Peeps

Izak Maitin, Bureau Chief

Bureau of Information Systems and Program Support, Site Remediation Program, New Jersey Department of Environmental Protection

John DeFina, Environmental Specialist

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New Jersey Department of Environmental Protection

Karen Magnanao, Principal Technician, Management Information Systems

Bureau of Information Systems and Program Support, Site Remediation Program, New Jersey Department of Environmental Protection

Kathy Pietras, Forms Analyst

Bureau of Information Systems and Program Support, Site Remediation Program, New Jersey Department of Environmental Protection